

**WHAT I CLAIM IS:**

1. A method for converting organic material (as hereinbefore defined) into a usable form of energy by means of microwaves, the method comprising the following steps:
  - 5 (a) drying the organic material to remove at least 80% of the moisture content whereby the dried organic material is converted into an energy storage form,
  - (b) submitting the energy storage form to sufficient heat to further alter its chemical composition into a fuel, and
  - 10 (c) exposing the fuel to microwaves to convert the energy contained within the fuel into a usable form of energy selected from thermal, electrical, high pressure, a plasma, ionised air or gas and a fusion energy.
2. The method according to Claim 1, wherein the energy storage form is carbonised.
3. The method according to Claim 1 or Claim 2, wherein the microwave operates at a frequency of 500MHz to 5000MHz and at a power of between 100W to 100 kW.
- 15 4. The method according to any one of the preceding claims, wherein the organic material is organic waste or fresh organic matter.
5. The method according to Claim 4, wherein the organic waste is selected from waste vegetables, fruits, manure, compost and meat scraps.
6. The method according to Claim 1, wherein the fuel prepared at step (b) is exposed to microwaves at step (c) in the following manner:
  - 20 (i) the prepared fuel is transferred to a glass chamber or a heat exchanger,
  - (ii) the glass chamber or heat exchanger is either transferred to, or preferably housed within a microwave cavity or microwave oven,
  - (iii) the microwave cavity or microwave oven is actuated whereby the prepared fuel is
  - 25 transformed into a flame or plasma of a temperature above 100°C.
7. The method Claim 6, wherein the prepared fuel is transformed into a blue flame or a plasma of a temperature above 400°C.

8. A method according to Claim 6, wherein the plasma is generated in the presence or absence of the plasma initiator, which comprises of a metal or non-metal or a compound of metal or non-metal.
9. The method of Claim 1, wherein the energy generated at step (c) is adapted for use in an internal combustion engine equipped with microwave igniters.
10. The method of claim 1, wherein the energy generated at step (c) is adapted to be used in a heating system or a cooling system.
11. The method of Claim 1, wherein the energy generated at step (c) is adapted to be used to generate plasma of a temperature above 100°C.
12. The method of claim 1, wherein the energy generated at step (c) is adapted to be used to produce an plasma or an ionised gas or air atmosphere, the plasma or ionised gas or air atmosphere being available for use in a Magneto Hydro-Dynamic (MHD) process.
13. The method of claim 6, wherein the glass chamber or heat exchanger is optionally fed by a gas or air stream.
14. The method of any one of Claims 6-13, wherein the fuel is exposed to microwaves under a switching or valve control such that the temperature and pressure generated is maintained within desired parameters.
15. The method of any one of Claims 6-14, wherein the steps are monitored to ensure that the conversion of energy from the organic material is maintained at a temperature and pressure in a sustainable and/or continuous manner.
16. The method of Claim 12, wherein the MHD process is adapted to generate electric power from plasma or the resultant ionised gas or air atmosphere either by using a permanent magnet or electromagnet or by inducing an electric current within a conductive coil such as copper.
17. A method according to any one of Claims 1-16, for use in a method of determining the energy value of an organic material, wherein the organic material has been prepared via steps (a) and (b) and exposed to microwaves at step (c), and wherein said

material is transformed into a plasma, the properties of plasma generated being a measure of the energy value of the organic material.

18. A method according to Claim 17, wherein the plasma properties used for determining the energy value of the organic material are selected from (i) the colour of the plasma generated, (ii) the volume of the plasma generated, (iii) the air pressure generated, (iv) the temperature of the plasma generated and (v) the efficiency of the plasma generated.
19. A method according to Claim 6, wherein plasma generated at step (iii) is confined within the glass chamber or heat exchanger used at step (ii) and is available to be harnessed or extracted for further use.
20. A method according to Claim 19, wherein the further use is use in an internal combustion engine, to drive a heating or cooling system, or to be further converted into thermal, electrical or high-pressure energy.
21. An apparatus useful in a method according to any one of the preceding claims comprising:
- (a) a microwave cavity or microwave oven,
  - (b) housed within the microwave cavity or microwave oven is a glass chamber, or a heat exchanger,
  - (c) optionally an inlet for providing a gas or air stream, preferably heated, to the glass chamber or heat exchanger,
  - (d) a means for harnessing or extracting the thermal, electrical, high pressure, plasma, ionised gas or air, or fusion energy generated within the cavity, and
  - (e) an outlet for exhaust gases.
22. An apparatus according to claim 21, wherein the means for harnessing the plasma or ionised gas or air, generated at step (c) of the method of Claim 1, comprises a coil of a conductive material such that when in contact with the plasma, the plasma is energised and rotates or vibrates thereby inducing an electric current inside the environment of the coil and wherein the current induction in the coil applies a reactive

force thus confining the plasma and enabling the plasma to be harnessed.

23. An apparatus according to Claim 21 or 22 adapted for the confinement of plasma generated by a method according to any one of the preceding claims.
- 5 24. An apparatus according to Claim 21, wherein the gas stream is air or oxygen, or a combustible oxygen mix.
25. An apparatus according to Claim 21, adapted for fitment and use in an internal combustion engine.
- 10 26. A method for converting organic material into a usable form of energy by means of microwaves according to Claim 1, substantially as hereinbefore described and exemplified with or without reference to the accompanying representations.
27. An apparatus for performing the method according to Claim 21, substantially as hereinbefore described and exemplified with or without reference to the accompanying representations.